

Maximize Reliability and Reduce Maintenance Costs

Blower Health Monitoring



Want to stop being blindsided by blower failure?

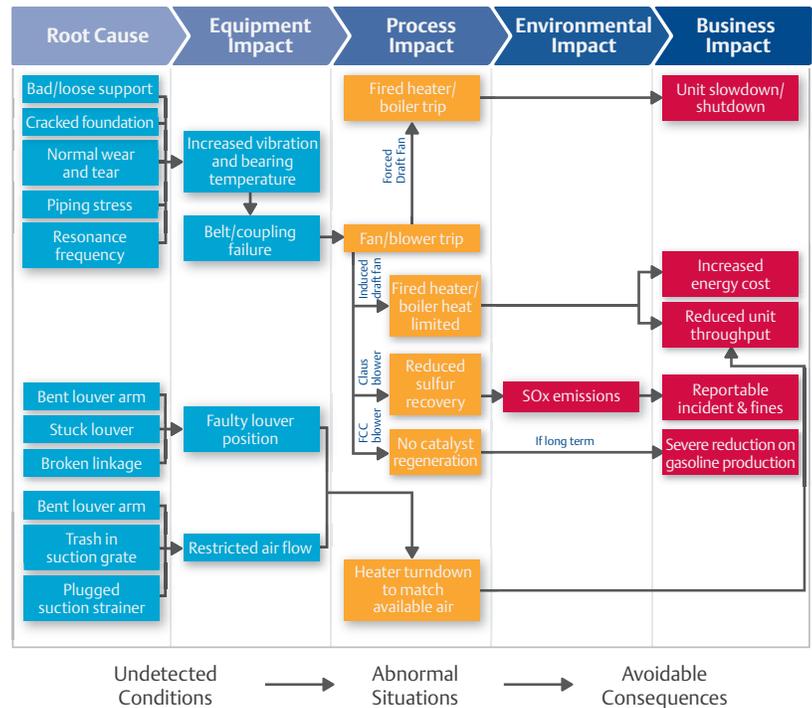
Every plant is trying to prevent unplanned downtime. Whether the cause is equipment failure or recurring “bad actors”, unplanned downtime adds up to an estimated five percent of lost production.

Many plants typically provide online monitoring and protection for critical rotating equipment, but only manually monitor less critical equipment like blowers. Blowers can still have an adverse impact on the plant; for example, a forced-draft blower on a fired heater can cause units to slowdown or shutdown, creating production issues and piling up expenses.

Industry-wide estimates show that 48 percent of unplanned downtime occurs due to equipment failure. Small variations and changes that prompt sudden shutdowns and repairs often blindsides operations personnel, but missed availability, production targets and rising maintenance budgets always get noticed. The cost of downtime and repair are often not considered when automated monitoring for blowers is deemed cost prohibitive.

Many developing equipment issues—which often go unnoticed during manual spot checks—can be prevented or mitigated with automated monitoring that provides timely information about abnormal operation and imminent failure. Cost and other barriers that prevented plants from using continuous monitoring have fallen, making continuous monitoring more of a possibility and also more cost effective.

Anatomy of Blower Failure



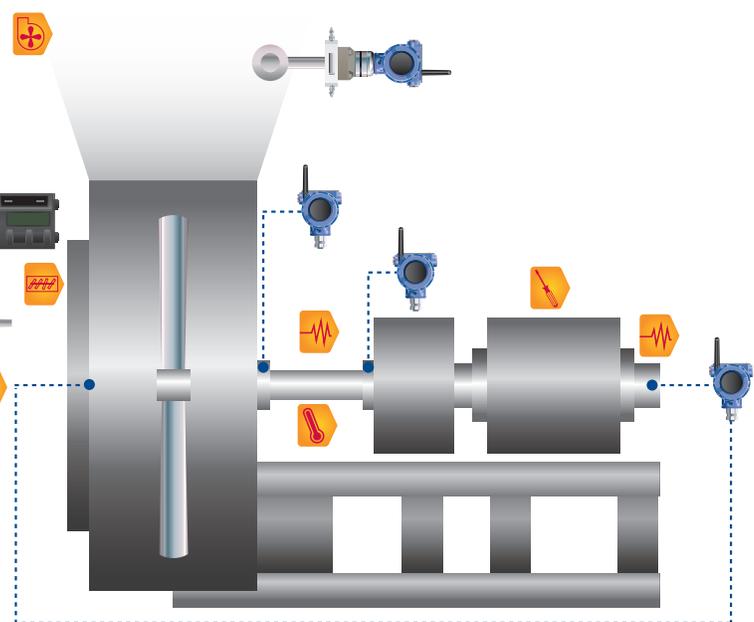
Common Threats to Forced-Draft Blower Health

BAD INSTALLATION
Improper installation can lead to shaft misalignment and excessive vibration, causing blower damage and possible failure.

BLOWER MALFUNCTION
Low discharge pressure indicates a problem with the blower itself. It could be dust buildup on the blades or the fan running at a lower speed than designed. This will lead to low flow and reduced capacity.

LOUVER MECHANICAL DEFECTS
Faulty louver position can result in restricted air flow, which causes reduction in heater capacity. Root causes include bent or broken louver arm, stuck louver, or broken linkage.

HIGH VIBRATION AND BEARING TEMPERATURE
Increasing motor or fan vibration and bearing temperature can result in belt and coupling failure leading forced-draft blowers to trip, which can cause unit shutdowns, increased energy costs, reduced throughput, and environmental issues. Root causes include bad support of frame, piping stress, cracked foundations, and normal wear and tear.



RESTRICTION
Low suction pressure is an indication of restriction in the inlet air ducts. This could be caused by trash in the grates, a plugged suction strainer, or faulty louver positions. Inlet restrictions will lead to reduced air flow which potentially causes a reduction in the available heater capacity and can even result in a blower tripping, leading to unit shutdowns, increased energy costs, reduced throughput, and environmental issues such as flaring.

What if you could foresee a blower's breakdown before it actually fails and creates ripples across the plant?

Equipment failure can interrupt an efficient and effective operation, eroding profit margins and potentially a safety record in the process. It's not the cost of equipment repair itself that creates the problem. It's the unplanned downtime where minutes, hours and days become missed production goals, lost profit, and an inability to meet contract commitments.

Reduce unplanned shutdowns

Minimize unplanned shutdowns and slowdowns by using Emerson's automated solutions to put your most inexperienced operators on par with your best and by automatically comparing current conditions to your baseline. Personnel—experienced or not—can make an intelligent call about a developing situation before it becomes more serious.

Get more from your maintenance budget

Reactive maintenance, such as repairing failed equipment, is estimated to cost up to 50 percent more than preventive maintenance which could have stopped the failure from happening in the first place. With up-to-date, online health information on your blowers, you can use maintenance to prevent failure, track alert data to analyze "bad actors", and determine root causes to improve asset reliability.

Protect your people and lower environmental risks

Your personnel and your equipment need quality care. Reduce risk by minimizing time in hazardous areas with Emerson's automated and wireless solutions. By providing your personnel with timely information on impending problems, you're allowing them to avoid the equipment failure and potential safety hazards that accompany emergency shutdowns.

Protecting your profit

Industry experts suggest that blower failure and shutdowns are responsible for 0.25% of lost production capacity. Care to get that back?

INPUT

Refinery capacity in barrels per day	250,000
Refinery net margin per barrel refined	\$5
Refinery total annual maintenance spend, excluding turnarounds	\$50,000,000
% of refinery total annual maintenance attributable to process blowers	0.18%
% anticipated reduction in process blower lost production capacity with diagnostics	30%
% anticipated reduction in process blower maintenance cost with diagnostics	30%

OPERATIONAL BENEFITS

a. Refinery capacity in barrels per day	250,000
b. Net margin per barrel	\$5
c. Production capacity lost due to process blower failures	0.25%
d. Reduction in lost production with blower monitoring	30%
e. Operating time in days per year	365
Annual Net Profit Improvement (=a x b x c x d x e)	\$342,188

MAINTENANCE BENEFITS

f. Annual maintenance budget per blower	\$7,500
g. Process blowers not currently monitored	12
h. Reduction in average cost to repair if blowers weren't run to failure	30%
Annual Maintenance Cost Reduction (=f x g x h)	\$27,000

TOTAL ANNUAL PROFIT IMPROVEMENT

\$369,188

Get Started Today at
EmersonProcess.com/Blowers



Blowers Solution

Emerson's Blower Monitoring integrated solution allows you to avoid unit slowdowns, shutdowns and potential safety incidents by giving you the ability to wirelessly monitor and detect deteriorating conditions before a unit trip occurs. Automated, online measurements and alerts provide you with confidence that changes will not be missed, as could occur with infrequent or periodic manual readings. Wireless deployment saves time and costs from the headaches of wiring diagrams and complex installations, and reduces costs from engineering, labor, trenching and scaffolding.



Request Information

Use our simple online form to select the options most important to you. An Emerson specialist will contact you shortly.



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Emerson's Blower Monitoring Products

SOFTWARE INTERFACE



AMS SUITE: ASSET GRAPHICS FOR OPERATIONS

Provides real-time graphical displays that indicate abnormal operation, including low differential pressure, resonance frequency detection, louver defects, plugged suction filter and overall blower health. A pre-engineered algorithm delivers diagnostic information for alarms, process analysis, trending, historization, and key performance indicators.



NETWORK INTERFACE



SMART WIRELESS GATEWAY

Connects IEC 62591 (*WirelessHART*[®]) self-organizing networks with any host system.

DEVICES



CSI WIRELESS VIBRATION TRANSMITTER

Provides early warning of excessive vibration in blowers. Helps determine root cause and corrective action. Optional functionality can identify premature bearing wear and predict failure.

ADDITIONAL OPTIONS



FISHER WIRELESS POSITION MONITOR

Indicates equipment position with a percent of span plus on/off indication. Monitors louver position for mechanical defect detection.



ROSEMOUNT WIRELESS PRESSURE TRANSMITTER

Enables pressure measurements, to monitor blower suction, discharge and differential pressures and optimize blower performance. Provides early warning of impending plugged suction filter.



ROSEMOUNT WIRELESS DP FLOWMETER

Provides high performance flow measurements to give valuable insight into blower operation. Decreases in gas flow can be caused by restrictions on inlet ducts.



AMS SUITE FOR MAINTENANCE

Aids early identification of asset problems using predictive diagnostics, allowing maintenance to schedule repairs while reducing cost and downtime.



ROSEMOUNT WIRELESS TEMPERATURE TRANSMITTER

Enables temperature measurements to monitor blower suction, discharge temperature limits, and optimize blower performance.

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